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SPENCER, KENNETH A. Records of further Ethiopian *Agromyzidae* (DIPTERA), mainly from South Africa, including eighteen species new to science. . . . . 15–36, 30 figs.

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RECORDS OF FURTHER ETHIOPIAN AGROMYZIDAE (DIPTERA), MAINLY FROM SOUTH AFRICA, INCLUDING EIGHTEEN SPECIES NEW TO SCIENCE

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With 30 Text-figures

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I. Introduction

This paper is supplementary to the author's synopsis of the Ethiopian Agromyzidae (1959) and is based very largely on material collected by Dr. H. K. Munro, Division of Entomology, Pretoria. The great majority of specimens have been bred and in many cases the puparia have been preserved ; this has greatly facilitated the description of new species and has permitted clarification of the biology of a number of species described earlier from caught specimens.

Eighteen further species are now described, nine belonging to the genus *Melanagromyza*, four to *Ophiomyia* and one each to *Agromyza*, *Phytobia*, *Liriomyza*, *Phytomyza* and *Napomyza*.

Additional material has also recently been studied from East Africa and Madagascar. A new species of *Napomyza* will be described in a forthcoming volume of the *Annales* of the Musée Royal du Congo Belge, Tervuren, and new *Melanagromyza*, *Agromyza* and *Ophiomyia* species will be described in a separate paper on the Madagascar material.

II. Acknowledgments

My very best thanks are due to Dr. H. K. Munro for allowing me to study the numerous Agromyzidae he has bred in conjunction with his own work on the Trypetidae. Valuable additional information has also been provided by Dr. Munro in many

letters. In the author's 1959 paper it was incorrectly stated that Dr. Munro was located at the Transvaal Museum, Pretoria; this should, of course, have read Division of Entomology, Pretoria.

I also wish to thank Dr. A. C. van Bruggen, Taxonomist, Division of Entomology, Pretoria, for valuable assistance, in correspondence, during the preparation of this paper.

III. Abbreviations

acr, acrostichal hairs.
dc, dorsocentral bristle(s).
ia, intra-alar bristle.
ipa, inner post alar bristle.
ori, lower fronto-orbital bristle(s).
ors, upper fronto-orbital bristle(s).
sa, supra-alar bristle.
r–m, anterior cross-vein.
m–m, posterior cross-vein.

Drawings: The scale line, unless otherwise indicated, represents 0·5 mm.

IV. Systematic Treatment

1. **Agromyza** Fallén

One new species is described below, making the total from the Ethiopian Region now 18.

Agromyza graminivora sp. n.

A specimen has just come to my notice in the British Museum (Natural History) collection which runs to *A. pallidifrons* Spencer in the author's (1959) key but which is clearly distinct from this species. It will suffice to record the characters differentiating the new species.

Head: frons not projecting above eye in profile; 2 strong, equal *ors* directed upwards, 2 weaker *ori* directed inwards; basal pits of *ors* large, conspicuous, closer to eye margin than in *pallidifrons*; epistoma distinct but narrower.

Wing: length in male 2·4 mm.

Colour: frons darker, predominantly blackish-brown; third antennal segment black on outer side but distinctly lighter, brown on lower inner side; first and second segments predominantly black.

Holotype ♂, Sénegal: Bambey, 21.ix.1944 (*J. Risbec*), bred *ex* leaf-mines in "millet".

The species can be included in the following revised couplet 8 of the author's (1959) key:

8 Frons projecting above eye in profile, brown; epistoma broad **pallidifrons** Spencer
– Frons not projecting, blackish; epistoma narrow . . . . . **graminivora***

Re-examination of the holotype and paratype of *A. pallidifrons* shows that there appears to be only a single *ors*; the remaining bristles are all incurved, and should correctly be considered as *ori*. In the new species there is the normal arrangement of two *ors* and two *ori*. *A. malvaceivora* Séguy is now removed from the key, as a separate key to all species from Madagascar has been prepared which will be published shortly.

2. **Japanagromyza** Sasakawa, 1958

This genus was erected for a small group of species in Japan in which the halteres themselves are yellow but the stalks dark brown. The other characteristic feature of the genus is the arrangement of bristles on the mesonotum, where there are two strong pairs of dorsocentrals as in *Melanagromyza* and also a pair of pre-scutellar bristles as in *Agromyza*.

* Species marked with an asterisk are described as new in this paper.

Japanagromyza nigrihalterata (Spencer), **comb. nov.**

Agromyza nigrihalterata Spencer, 1959.

After further study of *Japanagromyza* species, it is clear that this species should be placed in this genus. It differs from all other species in the genus in having a light, ochreous squamal fringe.

I have recently examined specimens from Formosa, bred from blotch mines in *Glycine soja*, referable to *Japanagromyza variihalterata* (Malloch), 1914, **comb. nov.** Malloch described the species as an *Agromyza*. In both this and the African species the halteres themselves are dark in the lower half and white only above.

The author's (1959) key to genera should be extended as follows to include this genus :

2 Prescutellar bristles present ; halteres at least partially white (except *A. somereni* Spencer) 2a
– Prescutellar bristles lacking ; halteres black (except *Ophiomyia aberrans* (Spencer)) 3
2a Three or more pairs of dorsocentral bristles present . . **Agromyza** Fallén
– Only 2 pairs of dorsocentrals present . . . . . **Japanagromyza** Sasakawa

3. **Melanagromyza** Hendel

The dominance of this genus among the Ethiopian Agromyzidae is further confirmed by the nine new species described below.

The difficult group of metallic green species included in couplets 24 to 28a of the author's (1959) key has been greatly clarified by study of this additional material. The species are now seen to have widely varying feeding habits, and include leaf-miners, stem and seed feeders. Slight morphological differences in the adults have found striking confirmation in conspicuous differences in the puparia. The three most important characters for separating these species are now considered to be the width of jowl, the length and degree of plumosity of the arista and the pilosity of the eyes in both males and females. Couplets 25 to 28a of the author's (1959) key should be revised and extended as follows to include three new species :

25 Jowls relatively broad, one-fifth to one-sixth height of eye 25a
— Jowls narrow, one-tenth height of eye 27
25a Medium-sized species, wing length 2·5–2·7 mm. 26
— Large species, wing length 2·8–3·4 mm.; arista largely bare ; eyes haired in male, bare in female. (*Larva in stems of* Senecio *spp.*) . . . **seneciocaulis***
26 Arista conspicuously plumose. (*Gall-causer in* Solanum *spp.*) **solanidis** Spencer
— Arista appearing bare. (*Larva in seeds of* Gerbera jamesonii *Bolus* ex *Hook. f.*) **gerberae***
27 At least male with haired eyes 27a
— Eyes bare in both sexes 28
27a Large species, wing length 2·7–3 mm. 27b
— Small species, wing length 2·2–2·4 mm ; mesonotum shining blackish-green. (*Larva in seeds of* Inula glomerata *Oliv. and Hiern.*) . **metallica** (Thomson)
27b Mesonotum greenish-black, tending to olive ; arista conspicuously plumose ; eyes long-haired in both sexes. (*Larva in seeds of* Senecio *spp.*) **compositana** Spencer
— Mesonotum greenish-blue ; arista only moderately plumose ; female eye with patch of only short, sparse hairs. (*Leaf-miner on* Gynura sarcobasis *S. Moore* (*Madagascar*)). . . . . **gynurae** Spencer
28 Large species, wing length 2·8–3·3 mm.; mesonotum brilliantly shining-green. (*Larva in seeds of* Thunbergia *sp.*) . . . . . **viridissima** Spencer
— Smaller species, wing length 2·2–2·7 mm.; mesonotum greenish-black or greenish-coppery 28a

28a Small species, wing length 2·2 mm.; mesonotum predominantly olive-greenish, abdomen coppery ; last segment of vein *m*4 two-thirds length penultimate. (*Larva in seeds of* Desmodium frutescens *Walp.* (*Mauritius*)) **desmodii***

— Larger species, wing length 2·4–2·7 mm.; mesonotum greenish-black or greenish-coppery ; last segment of *m4* shorter, half length penultimate. (*Larva in seeds of* Vigna *spp.*) . . . . . **vignalis** Spencer

Melanagromyza barbata sp. n. ✓

Head (fig. 1) : frons equal to width of eye, not projecting above eye in profile ; 2 equal *ors* ; 3 *ori* (on one side 4), the upper equal to *ors*, the lower 2 weaker and directed inwards ; orbital setulae long, regular, from lower *ori* to upper *ors* ; ocellar triangle somewhat extended, apex reaching lower *ors* ; orbits not greatly differentiated ; lunule prominent, upper margin forming semicircle ; jowls extremely narrow, one-fifteenth height of eye ; cheeks forming distinct ring below eye ; vibrissa weak, half length of lower *ori*, a few small peristomal hairs present ; eye abnormally large, length : width ratio 24 : 15; third antennal segment small, rounded, with slight pubescence ; arista bare, long, just longer than width of eye ; mouth margin above and at sides with thick fringe of ochreous hairs, these being somewhat longer than vibrissa above, decreasing in size down sides of mouth.

Mesonotum : 2 + 0 *dc*, second behind level of *sa* ; *acr* thick in 10 rows, only single hairs reaching first *dc*.

Wing : length in female 2·4 mm.; costa extending strongly to vein *m1* + *2* ; *r-m* beyond mid-point of discal cell ; last and penultimate segments of *m4* in ratio 15 : 25.

Colour : an all-black species ; frons matt, orbits and ocellar triangle weakly shining ; mesonotum and abdomen uniformly black, weakly shining ; wings hyaline, veins brown ; squamae pale grey, margins and fringe darker, contrasting brown ; halteres black.

Holotype ♀, South Africa : Pretoria, 7.xii.1915 (*H. K. Munro*), in Division of Entomology, Pretoria.

The author's (1959) key should be amended as follows to include the new species : *Cancel* couplet 1 *and replace by* new couplet :

1 Mouth margin with dense fringe of ochreous hairs . . . . . **barbata***
– Mouth margin bare, normal 2

Melanagromyza blepharidis sp. n. ✓

Head : frons one and a half times width of eye, not or just perceptibly projecting above eye in profile ; 2 *ors* directed upwards, the upper somewhat stronger ; 2 equal *ori*, similar to lower *ors*, the upper directed upwards and slightly inwards, the lower inwards ; orbital setulae fine, from lower *ori* to upper *ors*, 1 or 2 hairs in front proclinate, remainder reclinate ; orbits narrow, orbital bristles close to eye margin ; ocellar triangle conspicuous but apex at most reaching lower *ors*; lunule small, upper margin semicircular ; jowls relatively broad, rounded, deepest in centre, one-sixth height of eye ; cheeks forming narrow ring below eye ; third antennal segment rounded, arista bare, equal to width of eye ; eye length : width ratio 20 : 15.

Mesonotum : 2 + 0 *dc*, second rather short, at level of *sa* ; *ia* shorter than second *dc* ; *ipa* little longer than *acr* ; these short but relatively regular, in 10 rows, only single hairs extending behind second *dc*.

Legs : mid-tibiae with 2 short posterodorsal bristles.

Wing : length in male 2·2 mm., in female 2·3 mm.; costa extending strongly to vein *m1* + *2*; *r-m* beyond mid-point of discal cell; last segment of *m4* two-thirds penultimate.

Colour : frons uniformly matt black, ocellar triangle brilliantly shining black ; orbits weakly shining ; mesonotum shining black, only slightly more matt when viewed from front ; abdomen shining black ; squamae grey, margin and fringe contrasting black ; wings hyaline, veins dark, blackish-brown.

Puparium : pale whitish, 3·7 × 1·9 mm.; posterior spiracles (fig. 2) each consisting of 3 brown, well-chitinised, elongated buds, arranged lengthwise below an area above, which is only slightly differentiated but in the centre of which is a dark spot, representing the rudiment of the

horn found in many species of this genus; the 2 spiracular areas separated by approximately their own diameter.

Holotype ♂, South Africa: Uitenhage, xi.1952, bred from seeds of *Blepharis* sp. (Acanthaceae) (*H. K. Munro*); *allotype* ♀, same data, both in Division of Entomology Pretoria; *paratypes*, same data, 1 ♀, in Division of Entomology, Pretoria, 1 ♂, 1 ♀, in author's collection.

The species closely resembles *M. phaseoli* (Tryon), but is immediately distinguishable by the shorter ocellar triangle (fig. 3); it also resembles *M. spungaberensis* Spencer, from which it is distinguishable by the broader jowls and more shining ocellar triangle. It runs to couplet 57 in the author's (1959) key; this and subsequent couplets should now be amended and extended as follows:

57 Very small species, wing length 1·9 mm. . . . . **nicolaudis** Spencer
— Larger species, wing length 2·2–2·4 mm. 58
58 Jowls narrow, one-twelfth to one-twentieth height of eye 59
— Jowls broader, one-sixth height of eye 59a
59 Wings conspicuously darkened, brownish; *ori* long, equal to lower *ors* . **perinetensis** Spencer
— Wings hyaline, normal; *ori* shorter than *ors* . . . . **spungaberensis** Spencer
59a Ocellar triangle conspicuously long and narrow, extending to upper *ori*; veins pale brown . . . . . **phaseoli** (Tryon)
— Ocellar triangle shorter, apex at most reaching lower *ors*; veins darker **blepharidis***

Melanagromyza candidipennis (Lamb)

South Africa: Pretoria, 4.xii.1915, 1 ♂; Barberton, 15.v.1913, 1 ♂ (*both H. K. Munro*).

Nyasaland: Mlange Mts., Nayawani, 6400 feet, 27.viii.1956, 1 ♀ (*A. W. R. McCrae*).

Previous distribution: Seychelles, Tanganyika, Kenya.

It is noticeable that in all the specimens from Africa the wings are less conspicuously white than in the type. The wing venation, the high lunule and the long, shining ocellar triangle nevertheless make the species unmistakable. Couplet 9 of the author's (1959) key should be amended as follows to allow for this variation:

9 Wings whitish, veins unusually pale, second cross-vein nearer first than own length; lunule high and narrow, ocellar triangle long and conspicuously shining . . . . . **candidipennis** (Lamb)
– Wings at most hyaline, second cross-vein at least own length removed from first 10

Melanagromyza chalcosoma Spencer

South Africa: Bloemfontein, 12.iv.1923, 2 ♀, bred, but host not recorded (*H. E. Irving*).

The species feeds in the seeds of *Cajanus*, *Flemingia* and possibly other leguminous crops, and has previously been recorded from Nyasaland, S. Nigeria, Uganda and Zanzibar. Specimens have also recently been examined from Madagascar, bred from *Flemingia*.

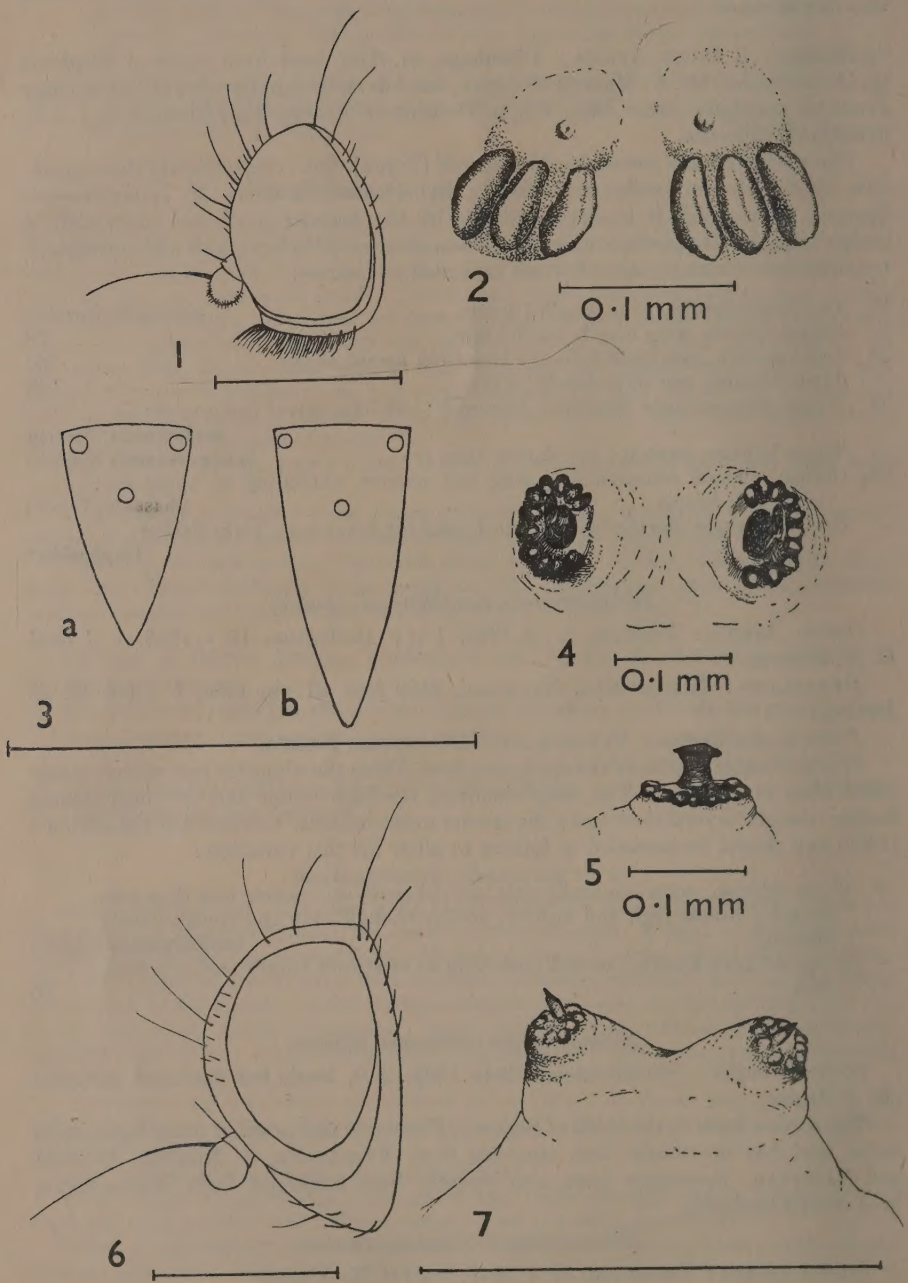
Melanagromyza communis Spencer

South Africa: Barberton, 19.v.1913, 1 ♂ (*H. K. Munro*).

Previous distribution: Belgian Congo, Tanganyika.

Melanagromyza compositana Spencer

Two further specimens of this species have now been examined, bred by Dr. H. K.



FIGS. 1–7.—*Melanagromyza :* (1) *barbata* sp. n., head ; (2) *blepharidis* sp. n., posterior spiracles of puparium ; (3) ocellar triangle : *a*, the same, and *b*, *phaseoli* (Tryon) ; (4) *compositana* Spencer, posterior spiracles of puparium ; (5) the same, posterior spiracle (side view) ; (6) *cotyledonus* sp. n., head ; (7) the same, posterior spiracles of puparium.

Munro from flower-heads of *Senecio ruderalis* Harv., South Africa: East London, 22.ix.1923. The type series was labelled "bred ex Composite 1" and a further series referable to the same species was "bred ex *Senecio* 532". In the original description it was stated that the species is an internal stem-borer. This was an assumption based on its relatively large size, which is now seen to be incorrect. Agromyzid larvae cannot move and feed indiscriminately throughout a flower-head and it can now be definitely assumed that the larvae of this species feed in the individual fruits of *S. ruderalis* and probably other *Senecio* spp.

A specimen without puparium but bred from a "yellow-flowered Composite" (*Dr. H. K. Munro*) from Shangombo, near Nangweshi, on the Barotseland-Angola border, is also referable to this species.

The puparium measures 3 × 1·3 mm. and is bright yellowish. The posterior spiracles (fig. 4) arise from a common protuberance and each consists of an ellipse of 10 or 11 moderately chitinised buds surrounding a small black T-shaped horn (fig. 5); the spiracles are separated by twice their own diameter.

The species is readily distinguishable from a new species described below, *M. seneciocaulis*, which feeds in the stems of *Senecio* spp., by the conspicuously plumose arista, narrower jowls and haired eyes of the female. Revised couplets of the author's (1959) key permitting identification of these species are given on p. 17.

Melanagromyza cotyledonus sp. n.

Head (fig. 6): frons exceptionally broad, over twice width of eye, broadly projecting above eye in profile; 2 *ors*, the upper directed upwards and outwards, the lower upwards and inwards; *ori* strong, directed inwards, number varying between 3 and 5; orbital setulae short, irregular, proclinate at rear, more upright in front; ocellar triangle broad, large, apex extending beyond lower *ors*; orbits conspicuously broad, differentiated; lunule abnormally high and broad, upper margin at upper *ori*; cheeks broadly projecting at base of antennae, continuing as broad band below eye; jowls deep, one-third vertical height of eye; antennae separated by low, narrow keel, third segment small, round; arista bare, length equal to width of eye.

Mesonotum: 2 + 0 *dc*, second at level of *sa*, little more than half length of first; frequently small additional third *dc*; *acr* thick, in 10 rows, some hairs extending to first *dc*.

Legs: fore-tibiae with 1 posterodorsal bristle, mid-tibiae with 2.

Wing: length in male 2·2 mm., in female 2·7 mm.; costa extending strongly to vein *m1* + *2*; *r-m* beyond mid-point of discal cell; last segment of *m4* three-fifths penultimate.

Colour: head entirely black, ocellar triangle and orbits only weakly shining; mesonotum black, weakly shining, slightly metallic; abdomen more shining, distinctly coppery or purple; legs entirely black; wings hyaline, veins blackish-brown; squamae whitish-grey, margins brown, fringe pale ochreous.

The larva mines in the leaves of the host plant indiscriminately on the upper and lower surface, and pupation takes place on either side of the leaf. The puparium is 3·7 mm. long and 1·5 mm. wide, pale whitish; the posterior spiracles (fig. 7) consist of two well-defined protuberances, each surmounted by an ellipse of 10–12 buds surrounding a slender, lightly-chitinised horn. The larval characteristics have been studied by Prof. E. M. Hering from empty puparia and a description will be published shortly in the *Tijdschrift voor Entomologie*, Amsterdam.

Holotype ♀, South Africa: Cape Town, Hout Bay, bred *ex* leaves of *Cotyledon orbiculata* L. (*H. K. Munro*); *allotype* ♂, same data, both in Division of Entomology, Pretoria; *paratypes:* 7 ♂, 2 ♀, same data, in Division of Entomology, Pretoria; 1 ♂, 1 ♀, same data, in British Museum (Nat. Hist.); 1 ♂, 1 ♀, same data, in author's collection. Three identical specimens have also been examined from Johannesburg.

The species runs to couplet 7 in the author's (1959) key, which should be altered and extended as follows:—

7 Lunule large, substantially higher than a semicircle; orbits broad, conspicuous 7a
– Lunule lower, broader 8
7a Orbits only slightly projecting above eye, cheeks linear; jowls one-fifth height of eye; arista plumose; squamal fringe white . **rutshurensis** Spencer
– Orbits broadly projecting above eye, cheeks broad; jowls one-third height of eye; arista bare; squamal fringe distinctly ochreous, almost brown . **cotyledonus***

Three specimens have also been examined, bred from the same host, SOUTH AFRICA: East London, in which the squamal fringe is distinctly darker, blackish-brown. In other respects these specimens agree entirely with the holotype. These specimens run to couplet 46 in the author's (1959) key. In the second alternative 47 should be replaced by 46a and a new couplet added as follows:

46a Distinct epistoma present; only 2 *ori* 47
— No epistoma present; 3–5 *ori* . . . . . **cotyledonus***

Melanagromyza cyrtanthi sp. n.

Head: frons one and a half times width of eye, not projecting above eye in profile; orbits distinct but not raised; 2 *ors* directed upwards, the upper slightly stronger; 2 equal, weaker *ori*, the lower incurved; orbital setulae conspicuously long, from before lower *ori* to upper *ors*, reclinate above lower *ori*, slightly incurved below; ocellar triangle prominent, apex produced as furrow to margin of lunule; lunule broad and low, sunk below plane of frons; jowls narrow, one-tenth height of eye; cheeks little more than linear; vibrissa strong, equal to *ori*; peristomal hairs coarse, numerous; antennae separated at base, third segment relatively large, slightly longer than broad, distinctly pubescent; arista inconspicuously plumose, just shorter than width of eye; eyes shortly and sparsely haired in male.

Mesonotum: 2 + 0 *dc*, second at level of *sa*; *ia* two-thirds length of second *dc*; *ipa* strong, two-thirds length of *ia*; *acr* long, irregularly in eight rows, thinning behind second *dc*, only single hairs at level of first *dc*.

Legs: mid-tibiae without posterodorsal bristles.

Wing (fig. 8): length in male 2·7 mm.; costa extending only to vein *r5*; *r-m* only slightly more than own length removed from second cross-vein, at point five-sixths distance from base of discal cell; last segment of *m4* four-fifths length of penultimate.

Colour: an all-black species; frons entirely matt, ocellar triangle slightly shining immediately in front of foremost ocellus but main triangular outline matt; orbits weakly shining; mesonotum largely matt, more shining at rear; abdomen shining black; wings hyaline, veins dark; squamae grey, margins and fringe black; halteres black.

Holotype ♀ (?), SOUTH AFRICA: Durban, bred from leaf-mines on *Cyrtanthus sanguineus* (Lindl.) Walp., 14.x.1922 (*H. K. Munro*); *allotype* ♂, same data, both in Division of Entomology, Pretoria.

The species runs to the group of small leaf-miners at couplet 31 of the author's (1959) key but is readily distinguishable by its larger size. In couplet 30, alternative 2, *for* 31 *read* 30a and *add* new couplet as follows:—

30a Small, leaf-mining species, wing length at most 2 mm. 31
— Larger species, wing length 2·7 mm.; first cross-vein conspicuously close to second, five-sixths distance from base of discal cell. (*Leaf-miner on* Cyrtanthus sanguineus (*Lindl.*) *Walp.*) . . . . . **cyrtanthi***

Melanagromyza decembris Spencer

A single specimen from Pretoria (suction trap), i.1957, is referred to this species. It agrees very closely with the holotype from the Cape Verde Islands; the only possibly significant difference is in the arista, which appears to be bare and slightly shorter in the South African specimen.

Melanagromyza desmodii sp. n.

Head : frons narrow, equal to width of eye, not projecting above eye in profile ; 2 equal *ors*, 2 slightly weaker *ori*, the lower directed inwards ; orbital setulae slight, reclinate ; ocellar triangle prominent, apex extending slightly below lower *ors* ; jowls narrow, one-tenth height of eye, cheeks forming narrow ring below eye ; antennae adjoining arista distinctly plumose, relatively long, equal to width of eye ; eyes bare in both sexes.

Mesonotum : 2 + 0 *dc* ; *acr* regular, in 10 rows, 4 central rows extending to first *dc*.

Wing : length 2·2 mm.; costa extending strongly to vein *m1* + *2*; *r-m* at centre of discal cell; last segment of *m4* two-thirds length of penultimate.

Colour : head black, ocellar triangle and orbits moderately shining ; mesonotum shining olive-green, abdomen more coppery with traces of reddish-purple ; wings hyaline, veins dark ; squamae and fringe white ; halteres black.

Holotype ♂, MAURITIUS: Reduit, iii.1950, brêd *ex* seeds of *Desmodium frutescens* Walp. (*J. R. Williams*) ; *paratypes*, 5 ♀, same data, all in British Museum (Nat. Hist.).

This species belongs to the group of feeders on Leguminosae in which the eyes are bare in both sexes. It resembles *M. vignalis* Spencer but is readily distinguishable by the small size, relatively longer last segment of vein *m4* and the darker veins. It also resembles *M. decora* de Meijere, 1922, bred from pods of *Phaseolus radiatus* L. in Java. I have examined the holotype of this species and can confirm de Meijere's observation that the ocellar triangle is conspicuously short, extending scarcely below the upper *ors*. This character satisfactorily separates the two species, but it is desirable that confirmation should be obtained from the immature stages of bred specimens.

The new species closely resembles *M. metallica* (Thomson), which feeds on flower-heads of Compositae, but in this species the eyes in the male are conspicuously haired.

The species is included in the revised couplet 28 of the author's (1959) key given on p. 18.

Melanagromyza frontata sp. n.

Head (fig. 9) : frons one and a half times width of eye, orbits slightly raised and just visible above eye in profile ; 2 strong equal *ors*, the lower directed upwards and slightly inwards, the upper upwards and slightly outwards ; 2 (on one side 3) similar *ori*, directed inwards ; orbital setulae conspicuously coarse and long, from before lower *ori* to upper *ors*, all reclinate except 1 or 2 hairs in front ; ocellar triangle broad but apex extending only to lower *ors* ; lunule large, substantially higher than a semicircle, upper margin at level of upper *ori* ; jowls broad, rounded, deepest in centre, one-fifth height of eye ; cheeks forming distinct narrow ring below eye ; third antennal segment round, arista bare, equal to width of eye.

Mesonotum : 2 + 0 *dc*, second well behind level of *sa* ; *ia* slightly weaker than second *dc*, *ipa* well developed, twice length of *acr* ; these regular, extending in 8 rows to level of first *dc*.

Wing : length in female 2·8 mm.; *r-m* at centre of discal cell; last and penultimate segments of *m4* equal.

Colour : frons conspicuously black, matt ; ocellar triangle and orbits weakly shining ; mesonotum matt black, more shining when viewed from behind ; abdomen shining black ; wings darkened, veins dark brownish-black ; squamae pale grey, margin and fringe ochreous, almost brownish ; halteres black.

Puparium : 4·3 × 1·35 mm., yellowish-white ; posterior spiracles consist of 2 circular areas separated by own diameter, each bearing some 5 or 6 large irregular buds ; each spiracular area greyish and lightly chitinised ; central horn normally found in this genus entirely lacking ; anterior spiracles consist of 2 smaller, more widely separated circular areas, each with 6 more clearly defined, smaller buds.

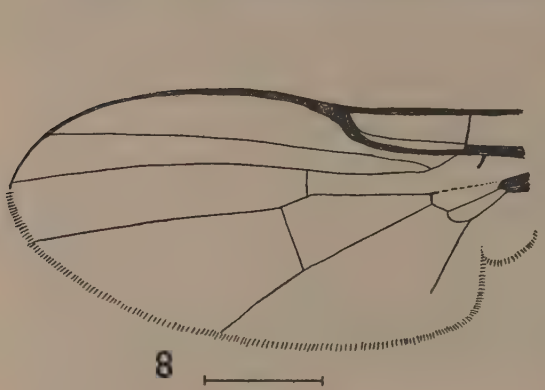
The host plant is unknown.

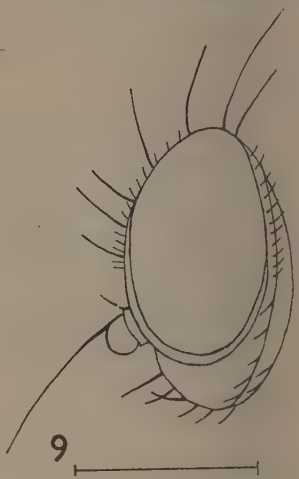
Holotype ♀, SOUTH AFRICA: East London, 24.x.1924 (*H. K. Munro*); *allotype* ♂, same data, both in Division of Entomology, Pretoria; *paratype*, 1 ♀, same data, in author's collection.

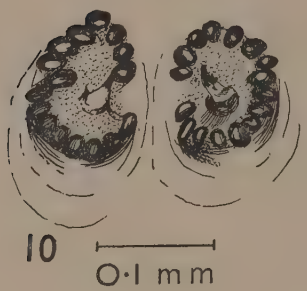
The species runs to couplet 21 in the author's (1959) key. Couplets 20 and 21

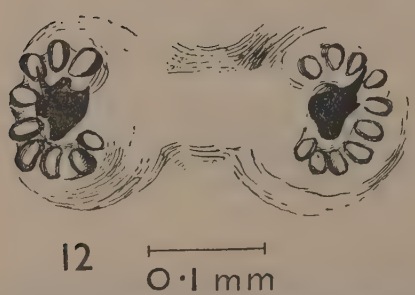
should now be amended and extended as follows to include this and a further new species, *M. thunbergiae*, described below :

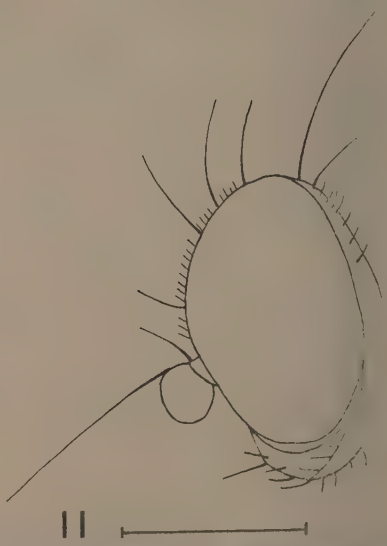
20 Mesonotum predominantly black, shining or matt 20a
— Mesonotum shining bluish, green or greenish-coppery 22
20a Mesonotum shining black, abdomen green, squamal fringe conspicuously white ; small species, wing 2 mm. (*Gall-causer in stems of Papilionaceae*) . **cunctans** (Meigen)
— Mesonotum matt, black or blackish-coppery. Larger species, wing length 3–3·3 mm. 21
21 Mesonotum matt, blackish-coppery ; squamal fringe white. Large species, wing 3·3 mm. (*Larva in seeds of* Thunbergia *sp.*) . . . . **thunbergiae***











Figs. 8–12.—*Melanagromyza :* (8) *cyrtanthi* sp. n., wing ; (9) *frontata* sp. n., head ; (10) *gerberae* sp. n., posterior spiracles of puparium ; (11) *seneciocaulis* sp. n., head ; (12) the same, posterior spiracles of puparium.

— Mesonotum matt black, without metallic sheen. Squamal fringe darker, ochreous 21a

21a Last segment of vein *m4* at most two-thirds length of penultimate; arista plumose . . . . . **nairobensis** Spencer

— Last and penultimate segments of *m4* equal; arista bare . . . **frontata***

Melanagromyza gerberae sp. n.

Head: frons broad, one and a half times width of eye, not projecting above eye in profile; orbits well differentiated, conspicuously widening below; 2 strong equal *ors*, the upper directed upwards and slightly outwards, the lower slightly inwards; 2 strong *ori*, equal to *ors*, the upper directed inwards and upwards, the lower directed inwards at widest point of orbits; orbital setulae numerous, reclinate, from below lower *ori* to upper *ors*; ocellar triangle large, apex extending to upper *ori*; lunule higher than a semicircle, upper margin mid-way between *ori*; jowls broad, deepest in centre, one-fifth height of eye, checks forming well-defined ring below eye; vibrissa only two-thirds length of lower *ori*; antennae separated by narrow keel, third segment rounded; arista long, in ratio 20 : 16 with width of eye, scarcely pubescent; eye in male with thick patch of long hairs above.

Mesonotum: 2 + 0 *dc*, second slightly behind level of *sa* and equal in length to *ia*; *ipa* weak, similar to *acr*; these extending irregularly to first *dc*.

Legs: mid-tibiae with 2 strong posterodorsal bristles.

Wing: length in male 2·7 mm.; costa extending strongly to vein *m1* + 2; *r-m* beyond mid-point of discal cell; last segment of *m4* relatively long, in ratio 20 : 25 with penultimate.

Colour: frons matt black; orbits weakly, ocellar triangle more distinctly shining; mesonotum dark greenish-black, predominantly shining, abdomen greenish-coppery; wings hyaline, veins dark, blackish; squamae and fringe white, margins scarcely differentiated.

Puparium: 3·4 × 1·35 mm., orange-yellow, with conspicuous bands of black tubercles at segment boundaries; posterior spiracles each consisting of almost complete circle of 16 blackish buds, surrounding a minute, rudimentary horn in the central unchitinised area (fig. 10).

Holotype ♂, South Africa: Pretoria, xi.1954, bred from flowers of *Gerbera jamesonii* Bolus *ex* Hook. f. (*H. K. Munro*), in Division of Entomology, Pretoria.

The species can be separated from other closely related species by the revised and extended couplets 25 to 28 of the author's (1959) key given on p. 17.

A series of five females also bred from flowers of the same plant, Pretoria, x.1950, differs from the holotype in having narrow jowls, a narrower frons, a shorter last segment of vein *m4* and pale veins. Until puparia are available the exact position of these specimens cannot be determined.[1]

Melanagromyza gymnosporiae Hering, 1957

Two specimens have been examined bred from leaf-mines on *Celastrus* sp., South Africa: East London, x–xii.1924. The holotype was bred from *Gymnosporia buxifolia* (L.) Szyszl, Cape Town.

Melanagromyza metallica (Thomson)

Two specimens bred by W. H. Ghent from flower-heads of *Inula glomerata* Oliv. and Hiern., South Africa: Bushbuckridge (Mauiljan), vi.1948, are indistinguishable from the holotype of *metallica* and from the species described by Lamb as *Agromyza similis* and synonymised with *metallica* (Spencer, 1959).

Inula is not known to occur on the Seychelles or Mauritius but the species may well feed on other closely-related Compositae.

Melanagromyza seneciocaulis sp. n.

Head (fig. 11): frons one and a quarter times width of eye, not projecting above eye in profile; 2 strong equal *ors*, the upper directed upwards and outwards, the lower upwards and inwards;

[1] Further bred material has been received from Dr. Munro; it is now clear that an additional species feeds in the stem. It is being described separately in one of the South African journals.

2 only slightly weaker *ori* directed inwards and upwards; orbital setulae long, numerous, from before lower *ori* to upper *ors*, all reclinate except 1 or 2 in front; ocellar triangle broad, apex tapering and extending slightly beyond lower *ors*; orbits well defined, broadest at *ors*; lunule large, upper margin slightly above lower *ori*; jowls deepest in centre below eye, one-sixth height of eye; cheeks forming narrow ring below eye; antennae separated by fine keel; third segment rounded, broader than long, with distinct, fine pubescence; arista long, bare; eyes haired in male, bare in female.

Mesonotum: 2 + 0 *dc*, second slightly behind level of *sa*; *ia* strong, equal to second *dc*; *ipa* slight, scarcely longer than *acr*; these thick in 10 rows, 6–8 extending to first *dc*.

Legs: mid-tibiae with 2 strong posterodorsal bristles.

Wing: length in male 2·8–3 mm., in female 3–3·4 mm.; costa extending strongly to vein *m1* + *2*; *r-m* just beyond mid-point of discal cell; last segment of *m4* in ratio 20 : 35 with penultimate.

Colour: frons and jowls matt brownish-black, orbits and ocellar triangle weakly shining; mesonotum brilliantly shining green, scutellum more coppery; abdomen somewhat darker, shining blackish-green; wing hyaline, veins brown; squamae and fringe white, margin only slightly contrasting, pale brownish-orange; halteres black.

Puparium: 3 × 1·6 mm.; dirty whitish; posterior spiracles (fig. 12) separated by twice their own diameter and each process consisting of an ellipse of 10 brownish, lightly chitinised buds surrounding a black broad-based, thick horn, which narrows to a fine point.

Holotype ♀, South Africa: East London, bred *ex* stems of *Senecio ruderalis* Harv., 28.ix.1923 (*H. K. Munro*), in Division of Entomology, Pretoria; *allotype* ♂, same data; *paratypes:* 6 ♂, 7 ♀, bred *ex* stems in *Senecio juniperinus* L. f., East London, 10.xi.1924; 4 ♂, 5 ♀, in Division of Entomology, Pretoria; 1 ♂, 1 ♀, in British Museum, (Nat. Hist.); 1 ♂, 1 ♀, in author's collection.

The species is readily distinguishable from *M. compositana* Spencer, which feeds in the flower-heads of *Senecio* spp., by the deeper jowls, bare arista and lack of haired eyes in the female. The amended couplets to the author's (1959) key, permitting identification of these species, are given on p. 17.

Melanagromyza thunbergiae sp. n.

This species is morphologically similar to *M. viridissima* Spencer. It differs in having the mesonotum distinctly matt, blackish-coppery and the wing veins conspicuously strong and dark.

Puparium (fig. 13): 3·8 mm. long × 1·75 mm. wide; pale orange-brown; unique in this genus in having the anterior spiracles in the form of 2 black, strongly chitinised horns; posterior spiracles (fig. 14) forming 2 broadly adjoining protuberances, each with an irregular ellipse of some 17–19 buds encircling a raised scar representing the normal horn.

Holotype ♀, South Africa, Zoutspansberg, Wylie's Poort, bred *ex* seeds of *Thunbergia* sp. (Acanthaceae) (*H. K. Munro*), in Division of Entomology, Pretoria; *paratype* ♀, same data, in author's collection.

The species runs to couplet 20 in the author's (1959) key; for the necessary amendment and extension to this couplet see *M. frontata*, described earlier in this paper (p. 23).

The author has hesitated before describing this species as new, in view of the close resemblance to *M. viridissima*, which also feeds in seeds of *Thunbergia* sp. However, no species are known to me showing a variation in the mesonotum from brilliantly shining to largely matt and it is assumed that *M. viridissima* and the new species probably feed in different species of *Thunbergia*.

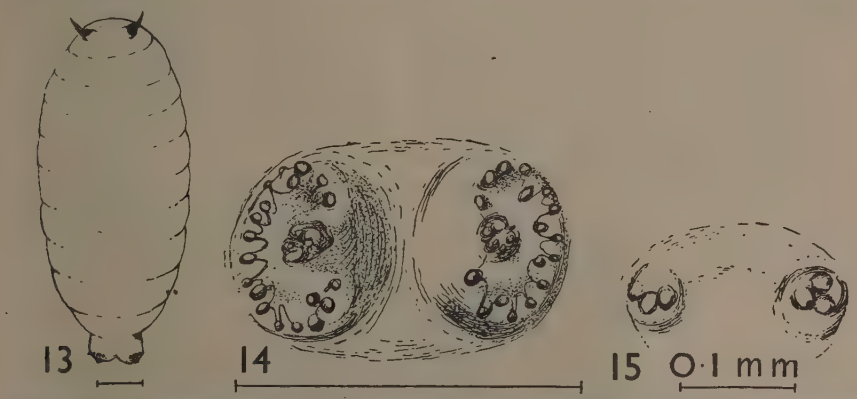
Melanagromyza vignalis Spencer

South Africa: Barberton, 15.v.1913, 1 ♂ (*H. K. Munro*). Kenya: Teita Hills, bred *ex* seeds of *Vigna unguiculata* Walp., 29.i.1957, 1 ♂, 1 ♀ (*P. E. Wheatley*).

Previous distribution: French Sudan, Sierra Leone.

Melanagromyza viridissima Spencer

This species was described from a single caught specimen from S. Rhodesia. It can now, after the examination of three bred specimens from Mposa, Zululand, bred by Dr. Munro in October, 1951, be recorded that the species feeds in the seeds of *Thunbergia* sp. (Acanthaceae). These specimens agree exactly with the holotype. The essential characteristics are narrow frons, jowls and orbits, short orbital setulae and plumose arista; these enable the species to be readily distinguished from a closely related new species described in this paper, *M. seneciocaulis*, in which the frons, jowls and orbits are significantly wider, the orbital setulae longer and the arista bare.



Figs. 13–15.—*Melanagromyza:* (13) *thunbergiae* sp. n., puparium; (14) the same, posterior spiracles; (15) *sp.* ex *Celastrus*, posterior spiracles of puparium.

Melanagromyza sp.

Galls on the stem of *Gymnosporia* sp., collected by Dr. Munro from Cape Peninsula, Hout Bay, x.1958, have been examined and these are almost certainly referable to an unidentified *Melanagromyza* sp. The pale whitish puparium has posterior spiracles each with three buds, typical of gall-causing *Melanagromyza* spp.

Melanagromyza sp.

A single specimen, now without its head, has been examined of a species bred from leaf-galls on *Celastrus* sp. by Dr. H. K. Munro, East London, x–xii.1924. The species has a shining black mesonotum and abdomen and conspicuously strong, dark veins; the squamal fringe is whitish-grey, and wing length 2·4 mm.

The puparium measures 2·7 × 1·3 mm.; it is pale yellowish but broadly brownish-orange along the entire ventral and dorsal surfaces. The posterior spiracles consist of three small buds, with no trace of a horn, arising from a well-defined protuberance; the spiracular areas are separated by three times their own diameter (fig. 15). The anus is situated on a distinct protuberance below the spiracles.

This clearly represents an undescribed species but the formal description must wait until further material becomes available. From the form of the posterior spiracles the species appears to be closely related to the European gall-causer, *M. simplicoides* Hendel.

4. **Ophiomyia** Braschnikov

Spencer (1959) recorded seven species of this genus from Africa and one further species from the Chagos. Four further species are now described, all belonging to the hitherto small group having the squamal fringe white. A further species of the

same group from Madagascar will be described shortly elsewhere. In addition, *Melanagromyza aberrans* Spencer, 1959, is now transferred to this genus, following the study of bred specimens. Couplets 1 and 2 of the author's (1959) key should be amended and extended as follows to include these species:

1 Squamae white; fringe pale, white or ochreous 2
– Squamae dark grey, fringe black 3
2 Halteres white . . . . . **aberrans** (Spencer)
– Halteres black 2a
2a Wings conspicuously silvery-white, vein *m4* pale, whitish 2b
– Wings hyaline, normal, veins dark 2c
2b Last and penultimate segments of vein *m4* equal; facial keel broad, bulbous, without furrow . . . . . **albivenis** Spencer
– Last segment of *m4* twice length of penultimate; facial keel broad but with conspicuous furrow . . . . . **helichrysi***
2c Jowls conspicuously elongated in front, forming angle of 30°; male without vibrissal horn; facial keel narrow . . . . . **productella***
– Jowls less acute, forming angle of 60°–90° 2d
2d Facial keel narrow; first cross-vein three-quarters distance from base of discal cell; male with vibrissal horn. (*Leaf-miner on* Solanum *sp.* (*Madagascar*)) . . . . . **solanivora** Spencer (*in litt.*)
– Facial keel broad and bulbous 2e
2e First cross-vein at centre of discal cell; last and penultimate segments of *m4* equal; male without vibrissal horn . . . . . **spuriosa***
– First cross-vein at least three-quarters distance from base of discal cell; last segment of *m4* shorter than penultimate 2f
2f First cross-vein scarcely more than own length removed from second; male without vibrissal horn . . . . . **pretoriensis***
– First cross-vein more than twice own length removed from second; male with long vibrissal horn. (*Leaf-miner on* Scaevola *sp.*) **cornuta** (de Meijere)

The species with white squamal fringe, which for convenience may be referred to as the *cornuta* group, now number nine. *O. aberrans* is unique in having the halteres entirely white. Four species, *O. productella*, *spuriosa*, *pretoriensis* and also the only known Palaearctic species of the group, *aeneonitens* Strobl from Austria, lack the vibrissal horn in the male characteristic of all other species of the genus. *O. aeneonitens* is further peculiar in being the only species in the genus in which the second cross-vein is lacking. *O. aberrans* and *O. helichrysi* feed in flower-heads (presumably the seeds), while *O. cornuta* (de Meij.) and *O. solanivora* Spencer (*in. litt.*) are leaf-miners; the biology of the remaining species of the group is not known.

Ophiomyia aberrans (Spencer), **comb. nov.**

Melanagromyza aberrans Spencer, 1959.

This species was described from an imperfect female. Study of a further female and a male which have recently been received from South Africa shows that the species correctly belongs to the genus *Ophiomyia*. The male has the conspicuous vibrissal horn frequently found in the genus, but in both sexes the facial keel is exceptionally narrow and does not show the protuberance below the base of the antennae, which has hitherto been associated with the genus. The species belongs to the group of leaf-miners and flower-feeders having the squamae and fringe white but remains unique within the genus in having also white halteres.

Bred by Dr. H. K. Munro from flower-heads of a species of Labiate, Pretoria, i.1936.

Ophiomyia helichrysi sp. n.

Head (fig. 16): frons relatively narrow, not projecting above eye in profile; 2 equal *ors* directed upwards; 2 equal *ori*, the lower below upper margin of lunule and directed inwards, upper directed inwards and upwards; orbital setulae reclinate, sparse; ocellar triangle large, apex produced narrowly to margin of lunule; jowls one-quarter height of eye, forming conspicuous angle in front, vibrissa equal to lower *ori*; cheeks broad below eye, almost half height of jowls; antennae widely separated by broad facial keel, which narrows uniformly anteriorly; keel with well-defined central furrow, third antennal segment small, arista short. (The head is partially deformed and the above description should be confirmed when possible from fresh specimens.)

Mesonotum; 2 + 0 *dc*; *acr* in 8 rows, sparse behind second *dc*.

Wing (fig. 17): length in female 1·6 mm.; costa extending to *m1* + *2*; first cross-vein slightly beyond mid-point of discal cell; second cross-vein only slightly distad of termination of vein *r1*, discal cell thus small; last segment of *m4* twice length of penultimate.

Colour: head entirely black, ocellar triangle and orbits moderately shining; mesonotum and abdomen shining black; wings conspicuously pale, silvery-white; veins pale brown, *m4* whitish-brown; squamae and fringe silvery-white, halteres black.

Holotype ♀, South Africa: Orange Free State, Glen, ix.1952, bred *ex* flower-heads of *Helichrysum argyrosphaerum* DC. (*E. K. Hartwig*), in Division of Entomology, Pretoria.

The species can be identified by the revised and extended couplets 1 and 2 of the author's (1959) key on p. 28.

Ophiomyia pretoriensis sp. n.

Head (fig. 18): frons one and a half times width of eye, not projecting above eye in profile; 2 *ors* directed upwards, the upper slightly longer; 2 weaker, equal *ori*, the upper directed upwards, the lower inwards; orbital setulae reclinate, minute, sparse; ocellar triangle broad, large, extending to upper *ori*; orbits well-defined; jowls one-fifth vertical height of eye, not conspicuously produced in front, forming angle of 60°; male without vibrissal horn but vibrissa strong, equal to upper *ors*; cheeks well defined below eye, one-third depth of jowls; facial keel relatively broad at base of antennae, distinctly protruding, not widening below, without central furrow; lunule small, slightly indented in centre; third antennal segment with slight angle at upper margin, rounded below; arista bare, long, slightly longer than width of eye.

Mesonotum: 2 + 0 strong *dc*, second at level of *sa*; *acr* coarse, in 8 rows, decreasing to a few irregular hairs at first *dc*; *ia* strong, two-thirds second *dc*; *ipa* weak, scarcely longer than acrostichals.

Wing (fig. 19): length in male 1·65 mm.; costa extending strongly to vein *m1* + *2*; first cross-vein conspicuously close to second, only slightly more than own length removed, at point five-sixths along discal cell; last segment of *m4* three-quarters length of penultimate.

Colour: head entirely black, frons matt, ocellar triangle and orbits shining; mesonotum shining black, abdomen less so; wing hyaline, veins dark, brownish-black; squamae including fringe entirely white; halteres black.

Holotype ♂, South Africa; Pretoria, 5.i.1916 (*H. K. Munro*), in Division of Entomology, Pretoria.

The species can be identified by the revised and extended couplets 1 and 2 of the author's (1959) key on p. 28.

Ophiomyia productella sp. n.

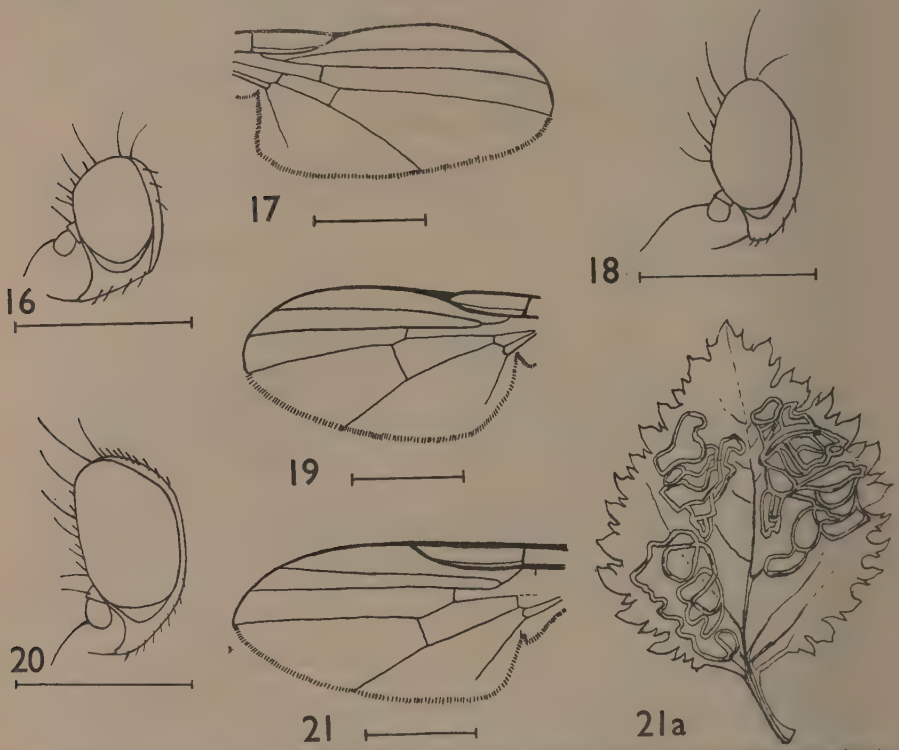
Head (fig. 20): frons at foremost ocellus one and a quarter times width of eye, not projecting above eye in profile; 2 equal *ors* directed upwards; 2 equal but weaker *ori* directed predominantly inwards and on each side a weak hair between; orbital setulae reclinate, sparse; ocellar triangle short, reaching to lower *ors*; orbits scarcely differentiated; jowls deep, one-third height of eye, greatly elongated in front, forming angle of 30°; small vibrissa at apex, male without vibrissal horn; cheeks conspicuous below eye, half depth of jowl; eye elongated, length : width ratio 16 : 10; third antennal segment small, round, with distinct pubescence; arista bare, short,

in ratio 8 : 10 with width of eye ; bases of antennae separated by very narrow keel, which is scarcely significantly wider and more bulbous below ; lunule small, upper margin forming flat ellipse.

Mesonotum : 2 + 0 *dc*, second short, distinctly behind *sa* ; *acr* short, in 8 rows, only few hairs behind second *dc* ; *ipa* well developed, half length of second *dc*.

Wing (fig. 21) : length in male 1·75 mm.; costa extending to vein *m1* + *2*; *r-m* at mid-point of discal cell ; last segment of *m4* in ratio 15 : 17 with penultimate.

Colour : head entirely black ; ocellar triangle and orbits only weakly shining ; mesonotum and abdomen largely matt black ; wings hyaline, veins dark-brown ; squamae, including margin and fringe, white ; halteres black.



Figs. 16–21*a*.—*Ophiomyia :* (16) *helichrysi* sp. n., head ; (17) the same, wing ; (18) *pretoriensis* sp. n., head ; (19) the same, wing ; (20) *productella* sp. n., head ; (21) the same, wing ; (21*a*) *verdalis* Spencer, leaf-mine on *Coleus* sp.

Holotype ♂, South Africa: Durban (Bluff), 6.x.1934 (*H. K. Munro*), in Division of Entomology, Pretoria.

The species can be identified by the revised and extended couplets 1 and 2 of the author's (1959) key on p. 28.

Ophiomyia spuriosa sp. n.

Head : frons equal to width of eye, not projecting above eye in profile ; 2 *ors*, the upper slightly stronger ; 2 *ori*, the lower weaker ; lower *ori* directed inwards and upwards, other *ori* upwards ; orbital setulae reclinate, slight ; ocellar triangle small, extending only slightly beyond lower *ors*, with furrow continuing from apex below ; jowls one-seventh height of eye, deepest in front but not greatly projecting, forming angle of 90° ; cheeks forming distinct ring below eye ; male without vibrissal horn ; vibrissa equal to lower *ors* ; 5 well-developed peristomal hairs ;

antennae separated by broad, bulbous facial keel, without central furrow ; upper margin of lunule flat, at level of lower *ori* ; third antennal segment small, round ; arista bare, short, length less than width of eye.

Mesonotum : 2 + 0 *dc*, second at level of *sa* ; *acr* in 8 irregular rows, only a few hairs extending behind second *dc*.

Wing: length in male 1·6 mm.; costa extending to *m1* + *2*; *r-m* at mid-point of discal cell ; last and penultimate segments of *m4* equal.

Colour : frons matt black, ocellar triangle and orbits weakly shining ; mesonotum and abdomen shining black ; wings hyaline, veins brown ; squamae and fringe whitish, margin not differentiated; halteres black.

Holotype ♂, South Africa : Pretoria, i.1957 (*ex* suction trap), Division of Entomology, Pretoria.

The characteristic features of this species are the white squamae, absence of vibrissal horn in the male, broad facial keel and the wing venation. It can readily be distinguished from other closely related species by the extension to the author's (1959) key given on p. 28.

Ophiomyia verdalis Spencer

South Africa : Pretoria, 2 ♂, bred from leaf-mines on *Coleus* sp., probably *hybridus* Hort. (*A. C. van Bruggen*).

These specimens agree closely with the holotype from the Cape Verde Islands (Spencer, 1959). The genus *Coleus* is not known to occur on the Cape Verde Islands but a number of Agromyzidae feeding on Labiatae are oligophagous and it is reasonable to assume that the species feeds there on one or more genera closely related to *Coleus*.

The leaf-mine is narrow, winding, upper surface, with frass in distinct, irregular strips at one or other sides of the channel (fig. 21a).

5. **Cerodontha** Rondani

Cerodontha denticornis (Panzer)

Basutoland : Little Bokong R., 5.i.1947, 1 ♀ (*L. Bevis*).

Previously recorded from Natal, Belgian Congo and Uganda.

6. **Phytobia** Lioy

One further species of this genus is described below, making the total for the Ethiopian region now eleven.

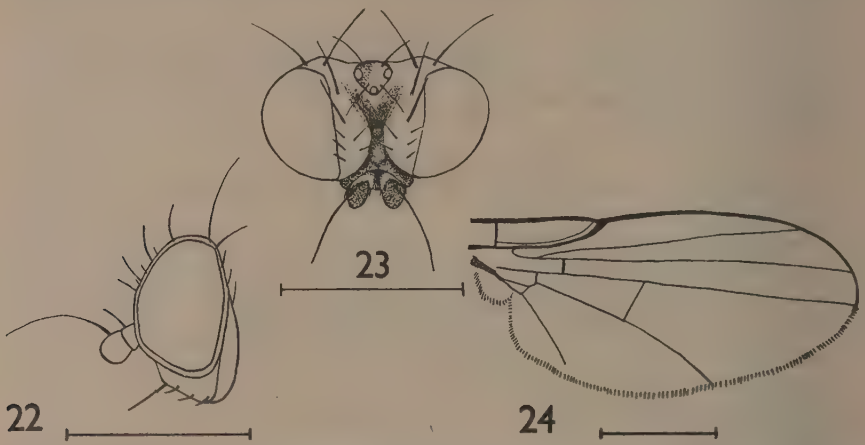
Phytobia (Poëmyza) orbitona sp. n.

Head (fig. 22) : frons and orbits in ratio 10 : 7 with eye ; orbits narrowly projecting above eye in profile, exceptionally broad (fig. 23), widening anteriorly, at widest point occupying three-quarters area between eye margins, then decreasing to base of antennae ; frons shaped by configuration of orbits, wide above and below, constricted in centre ; 2 equal *ors*, directed upwards ; 2 *ori*, the upper directed upwards and inwards, at widest point of orbits, the lower, smaller, directed inwards ; *ors* and upper *ori* arising from centre of orbits, lower *ori* from inner margin ; orbital setulae minute, sparse, between lower *ori* and lower *ors*, directed upwards and outwards ; ocellar triangle short, apex reaching only upper *ors* ; lunule high, extending to lower *ors*, exceptionally narrow above, widening below ; jowls deepest at rear, in centre one-fifth vertical height of eye ; cheeks forming narrow line below eye ; vibrissa stronger, significantly longer than *ors* ; eye length : width ratio 95 : 10 ; antennae approximate, third segment small, round ; arista bare long, equal to vertical height of eye.

Mesonotum : 3 + 1 *dc*, second long, not greatly shorter than first ; third and fourth equal, small, half length of second, equidistant before and behind suture ; *ipa* equal to third *dc* ; *acr* coarse, in 4 rows, extending to first *dc* ; hind scutellar bristles strong, normal ; front pair reduced, short and weak, slightly shorter than *ipa*.

Wing (fig. 24): length in male 1·9 mm., in female 2·2 mm.; costa extending to *m1* + *2* but noticeably weaker between *r5* and *m1* + *2*; discal cell large, *r-m* only one-third distance from base of cell; last and penultimate segments of *m4* variable but approximately equal.

Colour: orbits bright lemon-yellow, frons brownish-black with yellowish undertone; jowls bright yellow; face yellowish but hollows beside central keel blackish; third antennal segment brownish-black, second and first bright yellow; mesonotum and scutellum predominantly shining black; humeral callus, notopleural area, upper and hind margins of mesopleura bright yellow; remainder of pleura black; coxae blackish at base, becoming yellow anteriorly; femora black in basal third, gradually turning bright yellow for front two-thirds; tibiae and tarsi brown; abdomen shining black, all tergites with narrow yellow margins; wings hyaline, veins pale brown; squamae, including margin and fringe, uniformly yellowish; halteres yellow.



FIGS. 22–24.—*Phytobia* (*Poëmyza*) *orbitona* sp. n.: (22) head (side view); (23) head (front view); (24) wing.

Holotype ♂, SOUTH AFRICA, Barberton, 15.v.1913 (*H. K. Munro*), in Division of Entomology, Pretoria. A female, with same data, on the same mount, is without its head.

The author's (1959) key should be extended as follows to include this new species:

3 Orbits bright yellow 3a
– Orbits dark, brown to blackish; antennae black 4
3a Third antennal segment dark, brown or blackish; notopleural area yellow; 3 + 1 *dc* . . . . . **orbitona***
– All antennal segments yellow; notopleural area black; 3 + 0 *dc* **setariae** Spencer

Phytobia (*Calycomyza*) *gigantissima* Spencer

SOUTH AFRICA: East London, 2 ♂, 3.viii.1924 and 26.iv.1924 (*H. K. Munro*). Previously known only from the male holotype, BELGIAN CONGO.

Phytobia (*Calycomyza*) *humeralis* (v. Roser)

SOUTH AFRICA: Middleburg, 12.ii.1925, 1 ♂ (*H. K. Munro*).
The only previous record for the Ethiopian region is from the CAMEROONS.

7. **Liriomyza** Mik

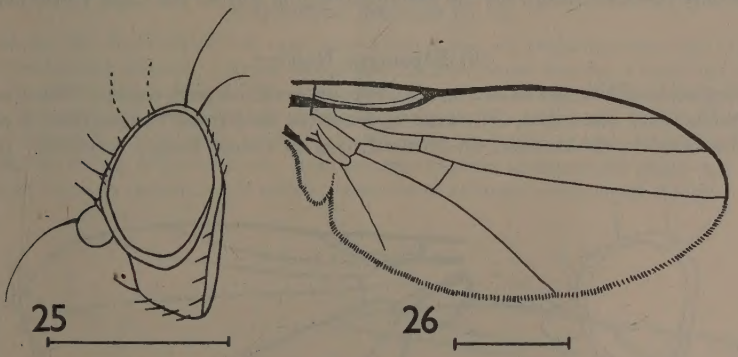
One further species of this genus is described below, making the total of described species in the Ethiopian region now six.

Liriomyza flavalis Spencer

South Africa: Port Elizabeth, Hume Wood, 23.xi.1952, 1 ♀ (*H. K. Munro*). The only previous record is of the male holotype from Pietermaritzburg.

Liriomyza novissima sp. n.

Head (fig. 25): frons broad, twice width of eye, distinctly projecting as ring above eye in profile; 2 *ors* (both missing on both sides); 2 strong, equal, incurved *ori*; orbital setulae irregular, very sparse, short, from below lower *ori* to upper *ors*; ocellar triangle short, not extending below upper *ors*; jowls very deep, extended at rear, in centre one-third height of eye; cheeks forming distinct ring below eye; eye length : width ratio 16 : 13; third antennal segment rounded, with very short pubescence; arista relatively long, only slightly shorter than vertical height of eye.



Figs. 25–26.—*Liriomyza novissima* sp. n.: (25) head; (26) wing.

Mesonotum: 3 + 1 *dc*, second slightly in front of *sa*, third and fourth equidistant before and after suture; distance between first and second double that between second and third; second and third decreasing in size uniformly, third and fourth equal; *acr* in 4 rows, regular, extending almost to first *dc*; *ipa* long, equal to third *dc*.

Wing (fig. 26): length in female 2·3 mm.; *r-m* just beyond mid-point of discal cell; last segment of *m4* in ratio 26 : 14 with penultimate.

Colour: frons, orbits, hind-margin of head, antennae and face entirely yellow; palps darker, brownish; ocellar triangle at rear adjoining black at back of head; mesonotum shining black but hind-corners broadly yellow; *ipa* on yellow ground; scutellum predominantly yellow, all 4 scutellar bristles on yellow ground, small black area below each front scutellar; humeral bristle on yellow ground, small circle of black in front; notopleura entirely yellow, apart from small black patch at front of lower margin; pre-sutural bristle on yellow ground, adjoining black of mesonotum; mesopleura yellow above, black along lower quarter; sternopleura entirely black, hypopleura black with narrow yellow upper margin; pteropleura yellow with small, faint, central black patch; coxae yellow, femora predominantly yellow, with irregular brownish streaks; tibiae and tarsi darker, brownish; abdomen shining black, but tergites becoming yellow at sides and with narrow yellow margins; wings hyaline, veins brown; squamae yellowish, margins and fringe darker, yellowish-black.

Holotype ♀, South Africa: Cape Town (Camp's Bay), 12.x.1948 (*H. K. Munro*), in Division of Entomology, Pretoria.

The species runs to couplet 6 in the author's (1959) key, which should now be extended as follows:

6 Head at rear of ocellar triangle black 6a
– Semicircle of yellow below ocellar triangle at rear of head; abdomen yellow laterally and tergites with yellow hind-margins . . . . . **flavalis** Spencer
6a Sternopleura black only in centre, yellow on outside; last segment of vein *m4* 3 times length of penultimate . . . . . **melantherae** Spencer
– Sternopleura entirely black; last segment of *m4* at most twice length of penultimate . . . . . **novissima***

8. **Pseudonapomyza** Hendel

Pseudonapomyza spicata (Malloch)

South Africa: Pretoria, i.1957, eight (*ex* suction trap); Kalahari, Gemsbok National Park, 16–24.v.1956, 1 ♂ (*H. K. Munro*).

The species occurs as a leaf-miner on Gramineae throughout Africa.

9. **Phytoliriomyza** Hendel

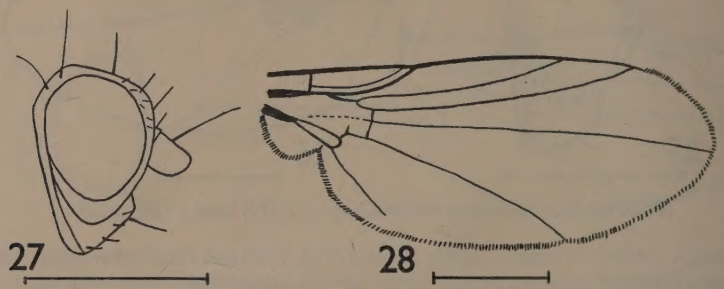
Phytoliriomyza perpusilla (Meigen)

Basutoland: Mamethes, x.1946, 1 ♀ (*H. K. Munro*).

The only previous record for the Ethiopian region is from the Cape Verde Islands.

10. **Napomyza** Haliday

Two species of this genus are now known in the Ethiopian region. One species is described below; the other, *N. strana* Spencer (*in litt.*) from Tanganyika, is shortly being described in the *Annales* du Musée Royal du Congo Belge, Tervuren.



Figs. 27–28.—*Napomyza munroi* sp. n.: (27) head; (28) wing.

Napomyza munroi sp. n.

Head (fig. 27): frons twice width of eye, in profile visible as broad ring above eye, increasingly projecting anteriorly; 1 strong *ors* directed upwards; 2 *ori* directed inwards, the lower twice length of upper; orbital setulae sparse, irregularly in 2 rows from mid-way between *ors* and upper *ori* to base of antennae, all proclinate; orbits broad, well differentiated; ocellar triangle extending to level of *ors*; lunule conspicuous, upper margin slightly lower than a semicircle, reaching to mid-way between *ori*; jowls conspicuously elongated at rear, cheeks broad, half maximum width of jowl; third antennal segment slightly broader than long, rounded below, with distinct angle at upper corner, conspicuously bare; arista short, just less than width of eye; well-developed epistoma present.

Mesonotum: 3 + 1 *dc*, fourth long, equal to third, second and third decreasing uniformly, second at level of *sa*, third and fourth equidistant each side of suture; *acr* sparse, in 2 rows, present only between second and third *dc*.

Wing (fig. 28): length in female 2·2 mm.; costa terminating just beyond vein *r4* + *5*; *m-m* in continuation of *r-m*.

Colour: frons orange-yellow, orbits, lunule, jowls paler yellow; hind-margin of head black, inner vertical bristle on black ground; face predominantly yellow, towards base of antennae greyish; third antennal segment black, second greyish, third paler, greyish-yellow; palps black; mesonotum and scutellum entirely matt, grey; pleura similar, mesopleura with narrow yellow upper and hind-margins; legs entirely blackish-grey, apart from well-defined yellow knees on all legs; abdomen shining black, tergites with narrow yellow borders; wings hyaline, veins pale, yellow at wing base; squamae whitish-yellow, fringe pale; halteres yellow.

Holotype ♀, South Africa: Grahamstown (hospital), 7.vii.1947 (*H. K. Munro*), in Division of Entomology, Pretoria.

The two African species of this genus can be distinguished as follows :

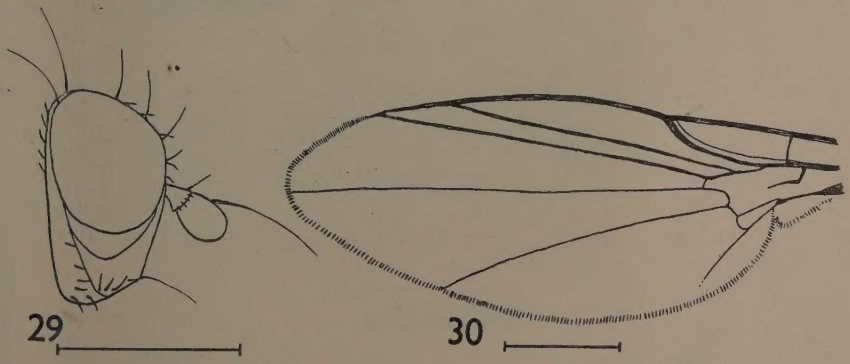
1 Cheeks prominent at and below base of antennae ; eye conspicuously small, slanting ; mesonotum moderately shining . . . **strana** Spencer (*in litt.*)
– Cheeks not projecting at base of antennae ; eye large, upright ; mesonotum grey, matt . . . . . **munroi***

11. **Phytomyza** Fallén

One further species of this genus is described below, making the total for the Ethiopian region now eleven.

Phytomyza renovata sp. n.

Head (fig. 29): frons slightly less than twice width of eye, not projecting above eye in profile ; 2 equal *ors* directed upwards; 1 strong *ori* directed inwards, longer than *ors*, a weak hair in front, representing lower *ori* ; orbital setulae in single row, from between *ors* to before lower *ori* ; orbits scarcely differentiated, ocellar triangle short, not reaching upper *ors* ; lunule large, upper margin forming semicircle ; jowls deep, one-third height of eye, extended at rear, cheeks broad below eye ; vibrissa strong, longer than *ori* ; third antennal segment conspicuously longer than broad ; arista long, equal to vertical height of eye ; conspicuous epistoma above mouth margin.



FIGS. 29–30.—*Phytomyza renovata* sp. n. *:* (29) head ; (30) wing.

Mesonotum : 3 + 1 *dc* ; second, third and fourth strong, equal ; second at level of *sa*, fourth well before pre-sutural bristle ; *acr* sparse, 2 rows with only 2 hairs in each, ending at third *dc* ; no *ia* ; *ipa* well developed but shorter than fourth *dc*.

Wing (fig. 30) : length in female 2·7 mm.

Colour : frons, orbits, jowls, face and palps bright yellow ; third antennal segment black, first and second segments bright yellow ; mesonotum and scutellum matt, ash-grey ; notopleura predominantly grey, with yellow undertone ; humeral callus yellow, slightly darkened, greyish ; mesopleura grey, turning to yellow at upper and hind margins ; sterno-, hypo- and pteropleura predominantly grey but with distinct yellow undertone; coxae, femora and tibiae yellow; tarsi darker, brown ; abdomen predominantly blackish, moderately shining, tergites with narrow yellow margins and becoming yellow laterally ; wing hyaline, veins pale-brownish, yellow at wing base ; squamae yellow, fringe darker, brownish-ochreous ; halteres whitish-yellow.

Holotype ♀, SOUTH AFRICA : Pretoria, i.1957 (suction trap), in Division of Entomology, Pretoria.

The species runs to couplet 5 in the author's (1959) key, which should now be extended as follows :

5 Femora entirely yellow 5a
– Femora black with yellow knees 6
5a Second and third antennal segments black . . . . . **clematidella** Spencer
– Second and third antennal segments yellow . . . . . **renovata***

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